

We Claim:

1. A rhenium and transition metal free catalyst for the oxidation of ethylene to ethylene oxide comprised of silver on a solid support and containing a promoter combination consisting essentially of (1) an alkali metal component in amount of at least 1000 ppm, based on the weight of the catalyst; and (2) a sulfur component in amount of 40-150% of the equivalent weight necessary to form the alkali metal sulfate.

10 2. The catalyst of claim 1 wherein the alkali metal component is cesium.

15 3. The catalyst of claim 2 wherein the cesium component is in amount of 1200 to 3000 ppm.

20 4. The catalyst of claim 1 wherein the support is alpha alumina.

25 5. The catalyst of claim 1 comprised by weight of 5-20% silver.

30 6. The catalyst of claim 1 additionally containing 10-300 ppm of a fluorine component.

35 7. The method for producing ethylene oxide which comprises reacting ethylene and molecular oxygen in the presence of the catalyst of claim 1.